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ABSTRACT

This paper discusses the inadequacies of existing communication paradigms and proposes a new paradigm which integrates general semantics and general system theory in an application to communication theory. The paper includes an historical overview of traditional communication models as well as a discussion of the implications of the paradigm for communication theory and research. (LG)

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A PROPOSAL

FOR A NEW

COMMUNICATION PARADIGM

Peter C. Gardiner

July 1972

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I INTRODUCTION

In communication, as in any area of interest, I find a need to organize thinking and a need for a framework which suggests an adequate method of inquiry into what is going on. I find a need for an overarching framework within which I can organize and integrate existing communication knowledge, become aware of gaps in the existing knowledge, and relate communication to the other areas of inquiry associated with the study of man.

Peter Drucker indicates the current state of affairs in communication: "I recently received a bibliography prepared for a graduate seminar on communications; it ran to ninety-seven pages. A recent anthology (The Human Dialogue, edited by Floyd W. Matson and Ashley Montagu, The Free Press of Glencoe, 1967) contains articles by forty-nine different contributors. . . . Each of the forty-nine contributors. . . . has a theory of communications which is incompatible with the others." (1; p. 2)

I find myself facing this difficulty currently in communication. As with many "disciplines" using constructs involving the study of man I find that semantic precision, the drawing of boundaries, and operationalizations are rather difficult, if not impossible for me in communication. When I probe constructs such as attitudes, beliefs, and sub areas of communication such as interpersonal communication, I find a rather ill

defined boundaries that tend to give way when probed and operationalized rather than a well defined construct or area of study. Barnlund, for example, suggests that in order to have interpersonal communication settings you must first and most obviously have ". . . two or more individuals in physical proximity." (2; p. 8) What about two people talking on the telephone? What about future viewphones? In short, just what is interpersonal communication?

Examples of construct "confusion" can be found in the variety of notions about beliefs, attitudes, and values. The definitions of attitude, for example, seem to range from the affective (like-dislike) dimension only to affective, cognitive, and conitive dimensions. Some operationalizations seem to indicate that attitude is whatever the attitude scale used is measuring. This leads to numerous, apparently conflicting/unclear operationalizations of the same construct. One test of a "good" construct is that even though there are infinitely many operationalizations one can recognize each as referring back to the construct itself.

It would seem to me that progress in communication theory and research is most unlikely without agreement about what communication is and all existing knowledge is organized and related within a common framework. In the physical sciences, progress was at a virtual standstill until Newton integrated previously scattered and unrelated knowledge into one overarching

framework. Semantic precision, operationalizations, clear boundaries all then became possible. Progress in the physical sciences accelerated rapidly after Newton. I see communication in a similar pre-Newtonian state. There are many lower level theories and constructs which currently appear unrelated and/or contradictory. They might be integrated if an appropriate overarching theoretical framework could be developed within which to operate and inquire.

In asking for an overarching theoretical framework and method of inquiry, I am suggesting a need for a new communication paradigm. There are many views about what a paradigm is. (3) I use the term to mean a framework within which to organize knowledge, to "see reality", and to inquire further searching for new knowledge.

Existing paradigms tend to enjoy monopolies in their holds upon a scholar's/scientist's thinking and method of inquiry. Heisenberg relates how when he was growing up that the atom was something with ". . . hooks and eyes, by which they could hang together." (4; p. 2) This was the existing paradigm. It was the paradigm by which explanations were advanced for observed behavior. It was the framework for organizing knowledge and for seeking new knowledge, at that time. Just as the terminology of a question determines to a great extent the terminology of an answer, a paradigm used to "explore reality" shapes "reality". The danger is not in the use of incorrect paradigms, but in getting a Pygmalion complex, that is,

falling in love with a paradigm and losing sight of the "reality" that the paradigm helps to organize and inquire into for a transitory period of time.

> It took 35 years for biology and the scientific world to accept Mendel's theory of dominant and recessive genes; we still debate the validity of Planck's invention of quantum mechanics in 1905, Galileo and Newton had difficult times; smallpox vaccine was used in China in the 18th century--Jenner, the one who introduced it in the western world a thousand years later, was ostracized in both England and the United States; eventually however, the theory received acceptance. (5; p. 1)

The purpose of my paper is to expose what I see to be the inadequacies of the existing communication's paradigms and to propose a new, over-arching paradigm. I hope to demonstrate that integration, organizing knowledge, showing interrelationships, parsimony, semantic precision, and further inquiry are fostered to a greater degree with my proposed paradigm than with existing ones. Polanyi refers to a need for a hunch player, ". . . a kind of a gambler who comes to tentative conclusions in the absence of facts. . . . He is affirming what he cannot prove." (6; p. 1) This is what I am attempting to do in proposing my untested paradigm.

II TRADITIONAL COMMUNICATION PARADIGMS

Barnlund has shown a chronological development of the ". . . major changes in the view of communication. . ." (2; p. 23)

He presents in order three alternative models of communication. (2; pp. 23-28)

The earliest, most basic, and influential of all the communication models was proposed by Shannon. Figure I shows the well known Shannon model. As a result of the work in cybernetics by Norbert Wiener and others the notion of feedback was introduced. Feedback, in mechanical models, is when a system has a way to link a sample of its output to its input so that it could control its own performance. Figure 2 shows the feedback principle in a communication model proposed by Westley and MacLean. Barnlund states that a third major change in the communication paradigm occurred when model makers ". . . turned from exclusive concern with the structural properties of communication--source, message, channel, receiver--to the functional relations that govern it." (2; p. 25) Paradigms were developed which included a wider appreciation of all the cues accompanying a message. Figure 3 shows a paradigm proposed by Barnlund. From a review of these three paradigms it is easy to account for differing views of existing knowledge, the differing theories and constructs, and the different ways of inquiring after knowledge in paradigm shaped "realities." Prior to the notion of feedback, presumably all work done within Shannon's paradigm omitted what later experimenters and theoriticians--operating from a different paradigm--called feedback and viewed as essential. Each paradigm helped to shape

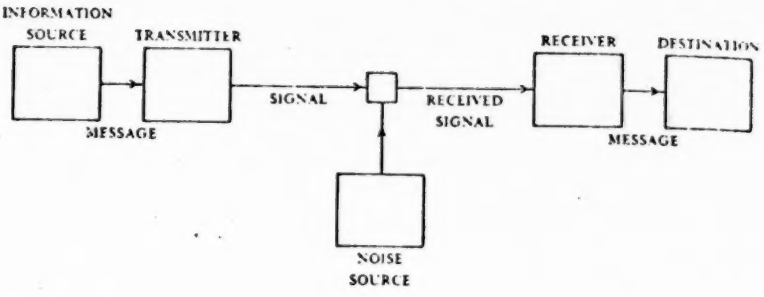


Figure 1. Shannon's model

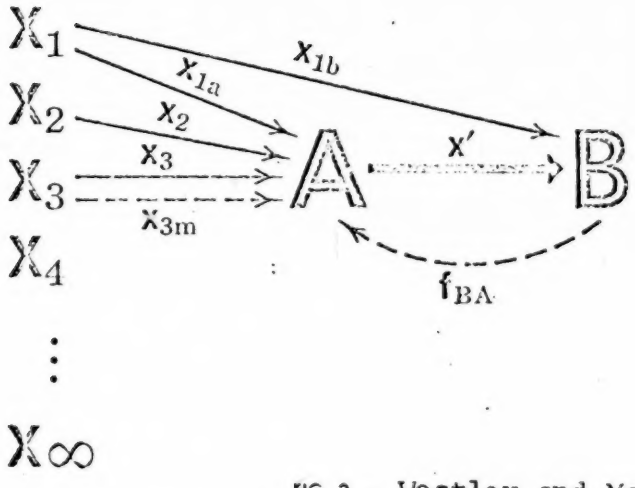


FIG. 2 . Westley and MacLean model.

The same Xs are selected and abstracted by communicator (A) and transmitted as a message (X') to B, who may or may not have part or all of the Xs in his own sensory field (X_{1b}). Either purposively or non-purposively B transmits feedback (f_{BA}) to A.

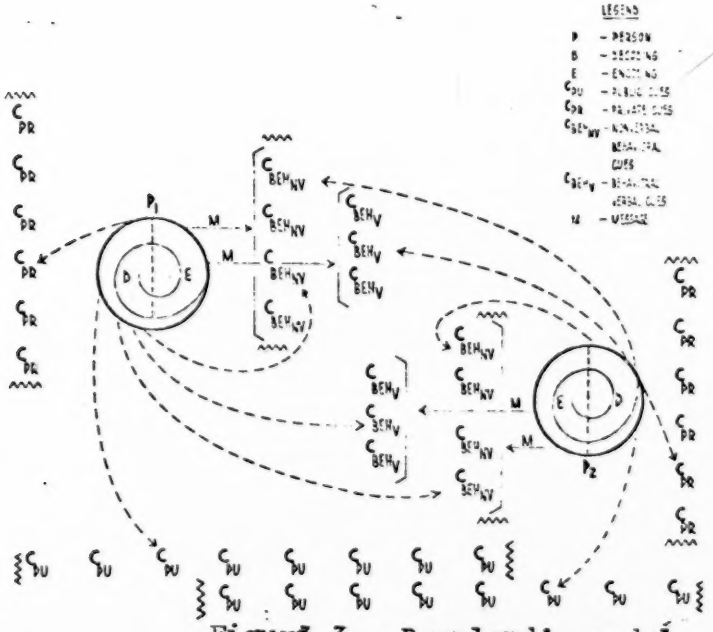


Figure 3. Barnlund's model.

the reality being investigated as well as providing a means/ method of investigation. The current pervasiveness of the cybernetic model is apparent from the multitude of books and experiments designed using this model. Books with titles such as This Cybernetic World by Parsegian are typical attempts to view all of reality through a cybernetic paradigm. Each successive model shown by Barnlund seems to have key elements of the preceding model while adding some additional element(s) or dimention. With Barnlund's paradigm we are left with the notions of a source, receiver public and private verbal and nonverbal cues, encoded and transmitted by channels and feedback of a similar composition.

Kelly suggests that a broad number of variables influence the response of a decoder.

> The sender encodes a message using some channel(s) and the receiver decodes the message impinging upon him. Upon decoding the message, some mediation (interpretation) and encoding takes place before the receiver responds (the evidence that some message was received. (7; p. 52)

He suggests the following mathematical model for analysis:

$$R = f(R_c, S_c)$$

where R = the response of the receiver

S_c= stimulus characteristics or factors impinging on the receiver

R_c= receiver characteristics

The equation reads "The response of the receiver is a function of within receiver characteristics and stimulus characteristics." (7; p. 53) Kelly then lists several receiver characteristics,

and he lists some stimulus characteristics among which is listed source characteristics of the message source which influence the receiver's judgment of the credibility of the source. Kelly then proposes extensive use of multiple regression analysis or canonical correlation as multivariate techniques suitable for analyzing data collected within his mathematical framework. I would point out that even though he has proposed a model showing response a function of within receiver characteristics and stimulus characteristics, his thinking seems to be guided by the paradigms previously presented. This is demonstrated by his use of such variables as source, channel noise, channel mode, encode, decode, etc.

In 1968 Miller proposed what he called information I and information 2. (8; pp. 51-68) In Miller's thinking information I ". . . consists of all the external stimuli to which an individual is exposed at any given moment." (8; p. 52) He goes on to state that "An individual's environment is saturated by information I--in fact, one could say that environment is information I." (8; p. 52) He then states:

> In behavioral terms, each individual has an available response repertory which not only helps fix the possible response alternatives, but also the probability of each of these alternatives occurring under particular environmental circumstances. This internal storehouse of knowledge and prior learning experiences is the second type of available information (information 2). (8; p. 53)

Miller then points out the ongoing dispute between Skinner and his followers (Miller sees them as an information I oriented group) and Chomsky and his group (Miller sees them as an information 2 oriented group). This devotion (pygmalion complex?) to one paradigm or another has evidently produced much heat as well as light. Miller's thesis is that research questions in communication should be concerned with answering questions involving interactional relationships between information 1 and 2. Miller, in examining both Dissonance theory and Incentive theory, states that

> In almost all cases (experimentation in either camp) magnitude of justification has been manipulated entirely in terms of the kinds of Information 1 available to the subject. . . . In no instance has there been any a priori attempt to assess the storehouse of information 2 that the subject brings to the situation. . . ." (8; p. 55)

Miller gives a further specific example of failure to account for information 2 with respect to source credibility. He claims little has been done to shed light on source credibility. He feels the reason is ". . . in the realtive lack of attention paid to the role of information 2 in shaping the perceptions of credibility." (8; p. 58) He states that "Rokeach has suggested a number of intriguing distinctions between the source evaluation behaviors of Open- and Closed-Minded individuals." (8; p. 59)

In light of Kelly's and Miller's comments and considering the role that paradigms play in shaping reality and our attempts

to organize and investigate it, I propose the following paradigm as a next step in the development of communication theory.

III PROPOSED PARADIGM

Consider information 1 as all physically measurable variables which impinge upon the sensory organs of an individual. This would hold regardless of the source of information 1. It would be measured by instruments developed and supported by the theories of optics, sound, light, color, the modynamics, pressure, etc., i.e. the physical and biological sciences. Information 1 may be measured external to an individual with or without his presence. All inputs to an individual whether from matter, plants, animals, humans, verbal, non-verbal, group, mass, etc., would show up as elements/dimensions in an information 1 matrix. Information 2 would include all elements/dimensions which an individual brings with him to an encounter with information 1. Included would be I.Q., location on a hierarchy of needs, a physiological state, a cultural background, motor response capability, age, sex, etc. A matrix of information 2 could be developed consisting of major sub matrices (with their respective elements) such as cosmetic data (birth date, socio-economic status, culture, etc.), psychological data, physiological data, epistemic data, etc. Techniques such as factor analysis could be used to determine appropriate element groupings into sub matrices.

A major problem arises in any attempt to develop an information 2 matrix. While cosmetic and physiological elements are easily enough determined, the psychological and epistemic elements cannot be directly measured. Here I suggest that an individual be "bombarded" with controlled information 1 matrices. The output information 1 matrix from the individual contains elements which reflect the internal state (elements) of his information 2 matrix. This is similar to the way subatomic particles are investigated in physics. No one ever sees them directly. They are studied by how they reflect incoming particles. The difference between information 1 elements out compared with information 1 elements in would indicate the state of elements in the information 2 matrix. In effect, we already use information 1 out in a somewhat similar fashion when we take certain physiological measurements. For the psychological elements we currently use attitude surveys, questionnaires, etc., rather than instruments with electrical dials to try to determine elements of an information 2 matrix.

Two potential problems arise in this procedure. First, humans are dynamic with changing equilibrium states. One might be temporarily in equilibrium at many levels on a hierarchy of needs over a period of time. A similar problem exists in the physical sciences. Measures of central tendencies and probability distributions tend to allow treatment of dynamic behavior. A second problem is somewhat more complex. Humans can presumably initiate of their own volition at any time an information 1 output. The question is, does an information 1 input necessarily

precede such an output and hence is there an information 1 transfer as a function of information 2? Stimulus deprivation experiments lead to the conclusion that humans are continually exposed to information 1 inputs. They cannot, in fact, long endure an experimentally created lack of information 1 input. I therefore tentatively conclude that there is a continual information 1 input and output and, hence, transfer. (If, at worst case, some or all aspects of human behavior are random perhaps the theory of random processes could be applied.)

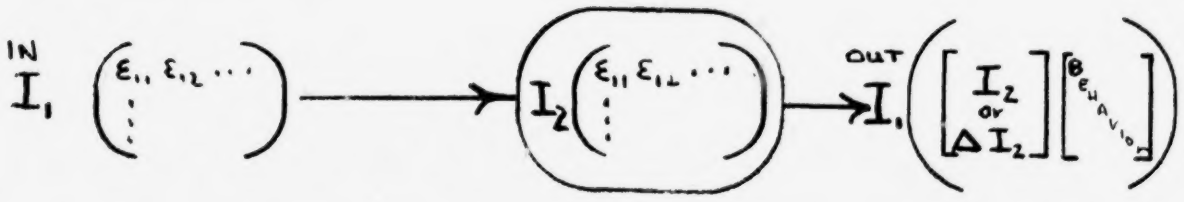
An additional problem in measuring information 2 elements by reflecting information 1 was pointed out by Heisenberg in the Uncertainty Principle which bears his name. This principle can be summed up by saying that there comes a point in attempting to observe where just by the process of observing you react with that which is being observed. What you then see reflected is not the thing observed itself, but the reaction of the thing observed with the means of observation. In the social sciences an example would be the "audience affect" (the Hawthorne affect). In summary, however, it does appear that considerable data could be gathered and organized to fill in grouped elements of information 2 matrices.

In addition to the information 1 output elements which reflect the state of information 2 within a subject, there are information 1 output elements which show the response or overt behavior of interest of a subject. Since all behavior which is observable by information 1 output is overt, it is useful to

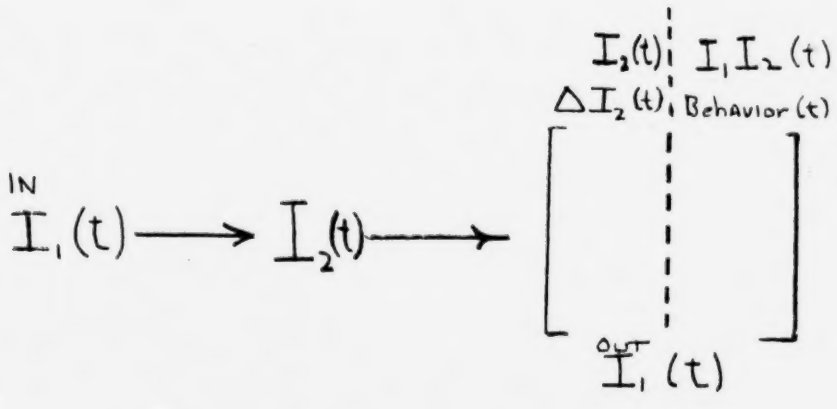
make the distinction in terms of behavior of interest. These behavior of interest elements are all the information 1 output matrix elements, less those which reflect the information 2 state, which give information about the behavior of interest. This portion of the information 1 output matrix is presumably related to the reaction of information 1 input and information 2 since it was not present in the information 1 input.

I now propose the paradigm shown in Figure 4a and 4b. By using the "black box" input/output transformation level of general systems theory, I have shown an input of information 1, an output of information 1, and the output information 1 consisting of two major groupings of elements. Both information 1 in and out are observable and measurable. This process may be thought of as an information 1 transformation. The information 1 output reflects via one major grouping of elements the state or change in state of information 2. The other major grouping shows resultant behavior of interest when information 1 and 2 react.

Notice that I have <u>eliminated</u> the notions of <u>source</u>, <u>environment</u>, and <u>feedback</u>. These notions are neither necessary nor useful and could be misleading. These notions may be more properly taken into account through information 1 and 2 and therefore be eliminated as separate, independent notions. An example will illustrate how source and environment may be elimated. Consider three men in the same room in a hospital on a certain morning: a surgeon, a patient, and a statistician who



a. basic model



b. Dynamic model

Figure 4. Proposed paradigm

works for a research project conducted by the local university on the biomedical aspect of certain diseases. The patient, young, married with two children, has been undergoing a thorough medical check-up and the final diagnosis is about to be read by a staff member of the hospital. The patient's tissue sample was examined and the finding of the biopsy is that the patient has cancer. (9; pp. 29-32) In this situation the impinging information 1 matrix is the same for all three individuals--the patient, the doctor, and the statistician. Yet it is obvious that the reaction of the information 1 matrix with each individual's information 2 matrix is what determines the communication and reactions, not either information matrix by itself. In this sense, environment and source exist only when information 1 reacts with information 2. A source and an environment <u>are</u> the reaction of the information 1 and 2 matrices. Sources and environments are internal phenomena rather than something "out there". There are some elements of these notions which can be manipulated such as pauses, pitch, volume, etc., which are purely information 1 elements. The only interest in a "source" in this respect is to produce the desired information 1 matrix element. The notions of sources and environments are accounted for--more properly in my opinion--in information 1 elements and in the reaction of information 1 and 2. I think that this is a key point. If experiments are framed within the cybernetic paradigm, it is possible to think of a "source" as having credibility, esteem, etc., and as something out there on

its own, independent of the receiver. In my proposed paradigm, this pitfall is necessarily avoided.

Feedback, I would suggest, is merely information 1 in a dynamic situation involving people. Defining what is feedback and what isn't may be a chicken and egg situation. In a mechanical situation, the cybernetic notion of feedback serves a useful purpose. Feedback can be examined in terms of toggle switches, electronic probes, circuits which can be turned on and off, and which have a time zero. It is possible to talk of outputs and feedback currents because these aspects can be isolated and controlled electrically or mechanically. However, with people there is no time zero, no isolation, no "circuits" which may be turned on and off, no freezing of time and references. If two people meet, with prior-to-meeting behavior vectors and they interact, both behavior vectors are modified as a result of the interaction. When then is feedback? Who modifies whose behavior? Since these questions are unanswerable I would claim that it is more useful to talk of an information 1 exchange or a series of linked information 1 inputs and outputs. This does away with mechanical thinking and feedback. It permits thinking about information 1 exchanges. In my paradigm feedback is not a useful notion.

By eliminating the notions of source, environment, and feedback, the processes to which these labels refer may still be studied completely within the context of information 1 and the reaction of information 1 and 2. I claim that the thinking

set "forced" by my paradigm permits examination of the processes to which these variables refer without the pitfalls encouraged by their use.

A final aspect of my paradigm is to place both the information 1 and 2 matrices as functions of time. By having information 1 (t) and information 2 (t) and reactions (t) the paradigm becomes dynamic in time rather than static. If as in Fisher's interact systems model, phases rather than time are the dynamics of interest, the paradigm could be viewed dynamically as related to phases and time could merely be a "clock" reference point.

This paradigm fosters an organization of knowledge and a method of inquiry seeking new knowledge which integrates the notions of General Semantics and General Systems Theory applied to communication theory. The paradigm is an overarching framework. It is not limited by mechanical analogies. It is dynamic and provides for a way of seeing and inquiring into a "reality" which it in part helps to shape without the pitfalls and inadequacies of existing communication models.

IV THEORY AND RESEARCH IMPLICATIONS

By using this paradigm it becomes necessary to sutdy reactions of information 1 in varying combinations and with various elements filtered with information 2 matrices. In addition, the same information 1 can be reacted with a variety of information 2 matrices. Finally, combinations of information 1 and 2 matrices can be reacted together and studied.

Where does most current communication research fall in the context of this paradigm? Since the research has been done on a variety of mental frameworks, it is difficult to say. It would seem that much work has been done in varying information 1 inputs and measuring changes in information 2 matrices by looking at the elements of information 1 outputs which reflect information 2 states. Of all the work being done, I suggest that only the behaviorists have methodically looked at how information 1 inputs can effect the behavioral elements of information 1 output matrices and they have done this without being concerned with the state or changes in state of information 2 matrices. There seems to be little or no work relating the effects of information 1 input to the totality of information 1 output. Rarer still, is the experiment which examines any of the matrix elements as a function of time or phases. Conclusions about human behavior are being made and inferences drawn based on "point estimates" on the time axis and partial information 1 output matrices. These weaknesses become obvious when viewed within the context of my paradigm.

By forcing awareness of the totality of information 1 output, data can be collected and integrated into a whole and complexity can be investigated by techniques such as multiple regression analysis and canonical correlation. Canonical correlation ". . . can provide an analysis of how each set of variables is related to the other." (7; p. 73) Rules of correspondance

can be developed from the total information 1 output which shows how information 1 and 2 matrices couple. The study of man then becomes the study of the total information 1 output matrix internally as a function of information 1 input matrices.

The implications are far reaching. Gone will be the experiments where only information 1 variables are examined. Gone will be the experiments which look at less than the total information 1 output matrix. Gone will be static experiments. In their places there will be multidisciplinary research. The split between the Skinnerians and Chomsky followers on the current level of abstraction will be meaningless on the thinking-seeing level of this paradigm, which due to its overarching nature, integrates both schools of thinking in its information 1 output matrix.

Current theories which were developed within context of the current paradigms will have to be reexamined. Examples would be Dissonance and Incentive theories. The potential is limitless. I see this paradigm as providing a means to integrate the now fragmented efforts to understand communication and man. It will no doubt one day be superseded as it itself supersedes. For a time, however, it does seem to have advantages over other existing paradigms for organizing and inquiring into what is going on. I conclude that it is a next step in the evolution of our understanding of man and communication.

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